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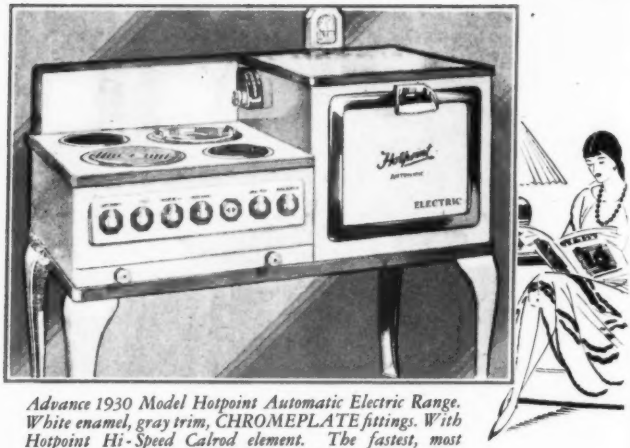
Electricity on the Farm

A Monthly Magazine for the Progressive Rural Family

December, 1929

DEALERS—Electrical Christmas Gifts are useful and easy to sell



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Electricity on the Farm

Vol. 2 DECEMBER 1929 No. 12

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Issud Monthly by
CASE-SHEPPERD-MANN PUBLISHING CORP.
(Successors to Farm Light and Power Pub. Co.)
Editorial-Executive Offices, 225 W. 34th St., New York
Western Office, 30 N. Michigan Ave., Chicago
KARL M. MANN, *President* I. H. CASE, *Vice-Pres. and Gen'l Mgr.*
FRED SHEPPERD, *Editor.*
H. T. MURRAY, *Vice Pres. and Western Mgr.*
K. H. GORHAM, *Advertising Manager*
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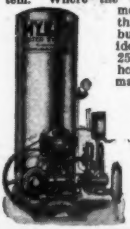

No. 2511 is for wells more than 24 feet deep—a complete, large capacity unit suitable for large homes, farms, estates, schools, creameries, etc. Automatically controlled, self-starting, self-stopping, self-oiling. Operates from station current or farm lighting plant. If you want a reliable, deep well outfit that will operate without attention, see this Myers piant.

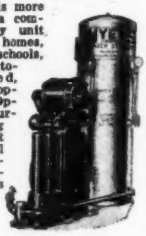

Fig. 2524 is for wells 24 ft. deep or more. No storage tank is required. It is completely automatic. The opening of a faucet anywhere along the line starts the pump, forcing fresh water direct from the well. Automatic air volume control. Belt driven. No attention necessary. Capacity range, 150 to 435 gallons per hour. Designed for operating with central station current or farm lighting plant.

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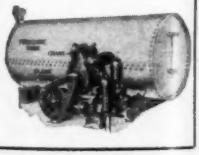

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The time saved with these and other electric appliances, such as vacuum cleaners, washing and ironing machines, refrigerators, fans and water heaters, is worth many times the trifling cost of the electricity consumed.

And around the farm, G-E motors driving pumps, milking machines, feed grinders, and other farm equipment, do their work swiftly, tirelessly, and at a fraction of the time and cost of hand labor.

If you are located on or near an electric power line, ask the power company for complete information concerning the possible uses of electricity on the farm.

Tune in on the General Electric Special Weekly Farm Program on WGY (Schenectady), KOA (Denver), KGO (Oakland). In addition, join us in the "General Electric Hour" broadcast every Saturday at 9 P.M., Eastern Standard Time, on a nation-wide N.B.C. Network.

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GENERAL ELECTRIC

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Electricity on the Farm

Vol. 2 DECEMBER, 1929 No. 12

Christmas on the Farm

There is something particularly appealing about Christmas season on the farm. Possibly it is because the farm home represents the ideal home—a home complete in itself, separate from other homes and unchanging as the years roll on. Certainly no city apartment, no matter how elegant, or city dwelling, with its continually changing environment, can develop in a marked degree that feeling of hallowedness which surrounds the old farm homestead at Christmas time.

The Christmas season seems to bring forth all those delightful, happy memories associated with the old home. Recollections of dear old dad and mother, if they are no longer with us, are brightened through the memory of the happy holidays which they provided for us in years gone by—and ofttimes at sacrifices which we only now appreciate.

Truly, if Christmas is sacred, it is so to the fullest measure when we all gather in the old farm house for Yuletide celebration. Then all the little differences which may have developed during the course of time are swept aside and forgotten—all the little troubles which we have met in our daily lives, banished.

Those mothers and fathers who have engendered in their children a love for the Christmas season have given them a gift which is beyond the power of purchase—a gift that is Divine. And it is in our power to create a like heritage for our children—to make the Christmas season such that they will in their maturity look backward with the same reverence and affection that we do now.

One Dozen More Eggs Per Pullet

By ROBT. C. HIENTON

ONE dozen eggs may not sound very impressive, but when you multiply one dozen by the number of pullets put into the laying house in the fall, you will have an idea of the increased winter egg production that you can obtain by using electric lights to lengthen the working day of the hen. It takes approximately half a kilowatt hour of electricity for each pullet during the laying season to do this.

That poultry house lighting during the fall and winter months, to stimulate egg production, does pay is the almost unanimous opinion of the poultrymen in the three northeastern counties of Ohio. Ashtabula, Lake and Geauga counties have some of the most densely populated poultry territory in the state. A recent survey showed that there were more than a thousand poultry farms in these counties using electric lights to help increase winter egg production.

What Lights Accomplish

The Ohio State Agricultural Extension Bulletin Number 56 states that—

1. Lights will increase winter egg production.
2. Records on 756 Ohio Calendar flocks show lighted flocks producing 20 per cent more than unlighted ones from October to March, and 9 per cent more for the entire year.
3. Lights will hasten breeders into production.
4. Lights will prevent winter molt of early hatched pullets.
5. Lights will hasten maturity of late hatched pullets.
6. Lights used on culls will increase the fall and winter production.
7. Lights properly used will materially increase the labor income.

The two methods of poultry house lighting that are most commonly used in this territory are the morning lights and the morning and evening lights, with the morning users being greatly in the majority. Advantages of using morning lights only, according to Mr. W. J. Swayne of Mentor, who operates a modern two-story plant with about 1,000 laying hens, are:

1. It is easier to get the hens on the floor in the morning than at any other time of day.
2. Dimming devices are unnecessary as the lights usually are turned off manually at daylight.
3. The poultryman has more time for evening recreation because it is not necessary for him to be at home during the early evening hours.

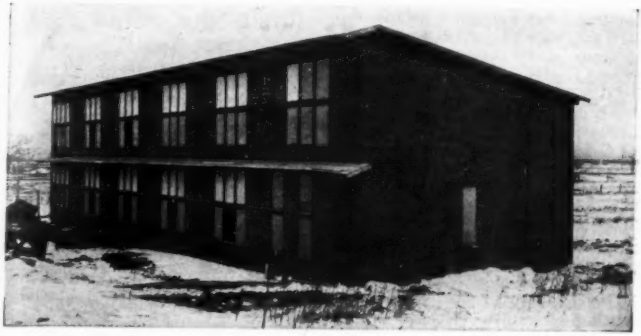
A time switch or an alarm clock is used to turn the lights on at the same time every morning when morning lights are used. In the larger flocks time switches are used which will turn the current both on and off.

The main advantage of the morning and evening lights method is that the poultryman turns the lights on himself in the morning, and sees that the water is not frozen in the winter months.

Simple Method of Dimming

A very simple method used in our territory for the dimming of evening lights is to run another circuit with only one or two lights on it. When the main lights are turned out, the dimmer lights are turned on for a few minutes and then turned off.

The total working day given to the laying hen in good production varies with the individual poultryman, and is from 13 to 14 hours. During the morning light method the lights are usually turned on at

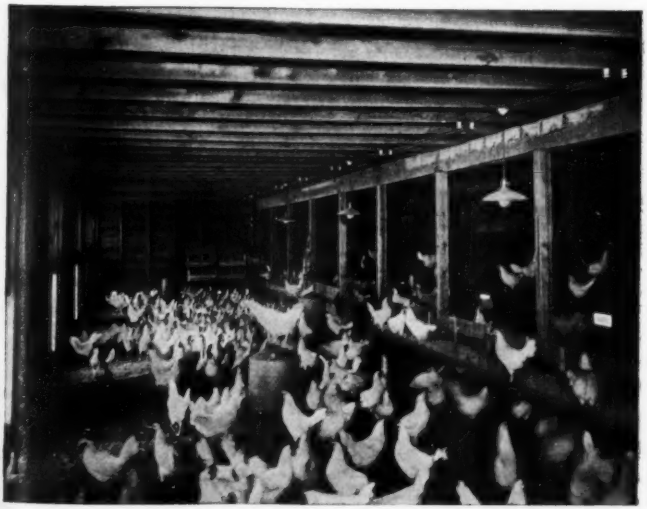


Hen House on the Swayne Farm near Menter, Ohio

3:30 or 4:00 in the morning. Several poultrymen are furnishing illumination on cloudy fall days.

The usual practice is to start the use of lights on pullets between October 1 and October 15 and discontinue them on March 1 or a little later. Most of the breeders follow the example of George Cone of Geneva, who uses lights on his breeding pens starting about January 1 or January 15, and then only to hasten the hens back into production.

We advocate either one of two methods for determining the number of lights in a coop. With a narrow, low ceilinged coop we rec-



Lower Floor of the Swayne Hen House, Showing Some of His Flock

ommend the use of a 50 or 60 watt lamp for every 200 square feet of floor space. If it is practical to use reflectors the smaller size bulb is large enough, but in an older coop with darker walls the slight extra operating cost of the larger lamp is offset by the increased amount of light obtained. The location of lamps depends on the individual coop but they are usually placed midway between the front of the coop and the dropping board.

For wider coops, with a higher ceiling, we advise the use of a 100 watt lamp for every 300 square feet of floor space. These two methods will give very satisfactory lighting in 90 per cent of the present houses.

In low ceilinged houses with 50 or 60 watt lamps, we advise the use of a 12-inch shallow dome reflector. In the larger coops with ceilings more than 9 feet high, a 14-inch shallow dome reflector with the 100 watt lamp should be used. There is a more satisfactory distribution of light with the shallow dome reflector than with any other types of reflectors.

Poultry House Lighting Rules

Poultrymen in our territory realize that there are several rules of poultry house lighting that should be followed. They are:

1. The lights should be turned on at the same time every morning.
2. The daylight period should be not over 13 or 14 hours.
3. Always have both feed and water available during the extra hours regardless of morning or night feeding.
4. Feed grain liberally to maintain body weight.
5. Try to maintain production at about 60 per cent, or slightly less.
6. Lighting is profitable from October 15 to March 15.
7. Discontinue the lights gradually in the spring, with a change of 10 minutes daily.
8. Continue to feed early and late in the day when lights are eliminated.

If all of these rules are observed, the poultryman who uses lights will materially increase his labor income.

Corn Shredding Saves Feed and Labor

On farms where a good deal of roughage is fed in the form of corn stover, the cured stalks and leaves can be utilized to better advantage if they are run through a husker-shredder. This practice has two major advantages. It puts the stalk and the leaves of the plant—30 to 40 per cent of its feeding value—in a form which can be utilized easier and more fully. It also eliminates the labor of husking the ears by hand.

When only a limited amount of roughage is available shredding is a great saver of feed, because little is wasted in handling and less of the shredded feed is wasted by livestock.

In cases where an excess of roughage is raised the method is still an economical one because the cost of husking is reduced and the feed can be handled easier. Many farmers use surplus shredded corn for bedding, as it is soft, clean and easily handled in a spreader.

The practice of shredding is increasingly important at the present time in cornbelt sections menaced by the corn borer. Binder attachments which cut the corn at the surface of the ground facilitate clean plowing and insure getting a majority of borers in the fodder. Shredding the complete plant gives these borers little chance to live over winter.

Corn should be bound and shocked in the field for at least a month before it is shredded. Ordinarily the machine is stationed in the barnyard, and the roughage blown into a haymow or empty silo. It may be stacked outside and covered with galvanized roofing or a tarpaulin if there is not room inside. The husked corn may be elevated into a wagon or truck from the machine or a sacking device can be used.

Commercial Candor

A western chain store ran the following advertisement:

Apples, oranges, imported nuts, fruit cake. Come early and avoid the rush. The early bird gets the worm.

—*Outlook*.

Handling Two Cows in Place of One with the

Milking Machine

By E. R. MEACHAM

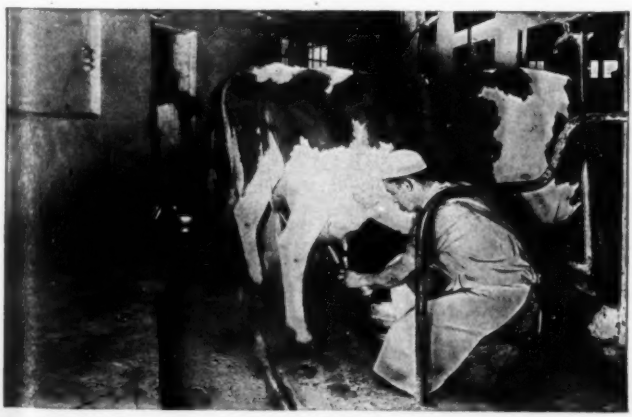
IT pays to produce the best. So reasoned Mr. E. N. Warner when he took over the operation of the farm near Windsor, Wisconsin, that had been the Warner homestead through several generations. Accordingly in the new dairy barn which a fire had made necessary, he installed a motor driven milker for the use of Frank Kobs, his tenant. Then he arranged to supply an extra grade of milk to a distributor in Madison.

This distributor's standards were high. He required that all milk included in his special grade contain less than 50,000 bacteria per cubic centimeter, but he was willing to pay about 40c a hundred pounds above his regular price to get it.

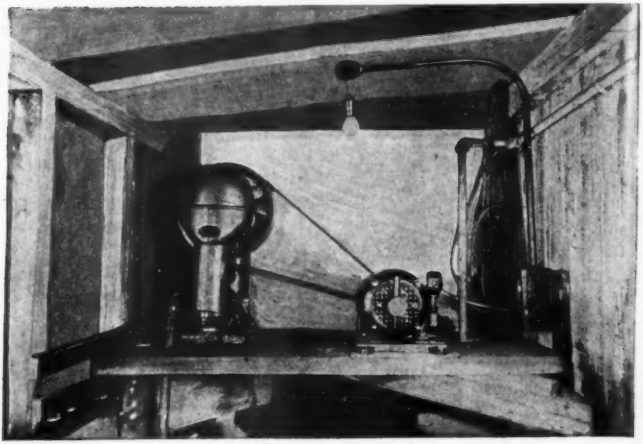
The milker is a great help in keeping dirt out of the milk, for when the long hair about the udder is kept well clipped, and the teats themselves are carefully wiped with a damp cloth just before the milker is put on, there is little chance for any dirt to get into the tightly covered pail. In this respect the milking machine is a long step ahead of ordinary hand milking in an open pail, which in spite of any usual precautions is bound to collect a certain amount of dirt, chaff and hair.

"The cotton discs from our strainers used to be kind of gray," said Mr. Kobs when he took me through the barn, "but when we milk by machine, they are just as white after straining as they were before."

On the other hand it has been argued that the machine itself offers an excellent place for the



These Clean Methods Are Possible in Almost Any Barn



This Motor Runs the Pump That Provides Vacuum for Pipes Throughout the Barn

growth of bacteria and that it is apt to contaminate the milk. If the cleaning of the machine is neglected, even temporarily, this may be true, but modern machines are constructed to make cleansing easy, and can be kept practically sterile. In fact 90% of the certified milk sold in Chicago is drawn by machines..

Another reason why Mr. Warner, who is a keen business man, put a milking machine on his farm was to help Mr. Kobs get more milk; not that the machine milked cow gives more, but with the help of the machine, Mr. Kobs can handle more cows. Without the machine he would certainly not care to milk more than 12-16 cows alone, but with its help he is able to handle a herd of 28. This increase in the size of the operation has a very good effect on the income.

Helps with the Field Work

And strange as it may seem, the milking machine helps him with the field work.

"I came to this 120 acre farm last fall too late to get any plowing done," said Mr. Kobs, "so this spring I had plenty to do. I was out in the field as soon as it was light and I worked just as late as I could see. My wife's 12 year old brother was with us, a city boy who had never milked. He soon learned to run this machine and all summer long he took care of the job like a veteran every night and morning. It gave me a good many extra hours in the field.

"And when I do the milking myself, the machine saves me a lot of time, too. There is never any delay in starting it. I step in here with the machine units, snap a button and away it goes. The other day I had to move the motor from the milking machine to the pump while the pump motor was being repaired, and I found that it takes me more than twice as long to milk these cows by hand as it does with the machine even though I strip everyone of them."

"Do you always do that?" I asked.

"I certainly do," said Mr. Kobs. "These cows have been well trained to machine milking, and I rarely get over a couple of quarts of stripping for the entire herd, but it is good insurance to see that

every quarter is milked out and that there is no injury or inflammation that might otherwise escape attention. I have never had a cow lose a quarter because she was milked by machine."

"Do you think you get as good production by the machine method?" I asked.

"Yes, I think so," said Kobs. "I set the relief valve in my pipe line to maintain only 12-13 inches of vacuum, and my pulsator to work about 45 times a minute. The cows seem to like this gentle operation, and though I leave the machine on each cow only 4-6 minutes, I believe it gets all their milk. I know they stand better than when I milk them by hand."

No Pairing of Cows Necessary

Mr. Kobs does not make any attempt to arrange his cows in pairs so as to milk those that take about the same length of time together. In some cases a little time might be saved in this way, but with the gentle suction which he uses, he does not feel that the machine does any harm if left on till both are through.

He attributes a lot of his milking speed to the fact that he uses three milker pails with two double heads so that he can always shift a head from a full pail to an empty one and leave it at work while he empties the milk. This is an important point in saving the time of the machine, especially when it milks two cows at a time.

One Man Handles Four Cows at Once

Two double units capable of milking four cows at a time are about all that one man can manage, and are sufficient for herds that one man would ordinarily milk. The size of the motor depends mainly on the type of vacuum pump that is used, and to some extent on the length of the pipe line.

The Motors for the Machines Are Mounted on the Pail Covers

Mr. Kobs finds a half horse power motor ample and that is in accordance with a general rule of ¼ h.p. for each double unit used. There are some machines, however, that require considerably more power, even up to 3 h.p. The current should ordinarily come to the milking machine at 220 volts instead of at the lighting voltage of 110. This demands a 3-wire circuit to the barn. This wiring will be well worth the extra cost because the motor will probably give better service and will not be so apt to cause a flicker in the lights during milking. The size of the wire will of course depend upon the size of the motor and the length of the circuit.

Time Saved at Little Cost

The time which the milking machine saves really costs very little in current to do the work. The exact amount of energy used will vary with the type of the machine. The portable machines require considerably less energy than the more common pipe line type. With the portable machines 1 kilowatt hour will often furnish enough power to milk a cow twice a day for a month. With the pipe line machines the requirement is rarely over 4 kilowatt hours per month.

Tests made throughout the country show that on the average farm it takes about 4 kilowatt hours to draw 1000 lbs. of milk.

Mr. Kobs keeps his machines scrupulously clean.

"Is it a big job?" I asked.

"I don't think so. Of course I have running hot water and that certainly makes a difference. Before I go in for breakfast, I turn on the electric water heater. When I come out, the hot water is ready. I can wash my machine in 15 minutes."

Cleaning the Milking Machine

The United States Department of Agriculture Farmer's Bulletin No. 1315 on *Cleaning Milking Machines* gives the following simple directions for doing the job easily and effectively:

1. Immediately after milking rinse the machine in cold or luke warm water, drawing the water through the teat cups and tubes by vacuum. Break the flow by lifting and dipping the cups, ten or twelve times.

(*Continued on page* 28)

The Aerator and Milking Machine Help Mr. Kobs Produce High Quality Milk

Mechanical Refrigeration

For the Dairy Farm

By E. H. PARFITT

AT Purdue University the Dairy Department in conjunction with the Department of Agricultural Engineering, have during the past summer been working on a project entiled, "The Value of Mechanical Refrigeration on the Dairy Farm." This project has been considered from two angles. *First*, the dairy farm that is retailing the milk produced in bottles, and using a dry box of the walk-in type for refrigerating its milk, and for this work a dairy farm near Mulberry, Indiana, was selected. *Second*, the dairy farm that wholesales its product in milk cans and uses an immersion type cooling tank. The Dairy Barn at Purdue was selected for this work in that close checks upon the work could easily be obtained.

The results to be reported on are the bacteriological and temperature studies of the milk, handled under these two conditions, and both cases exemplify commercial practices as found on the two types of dairy farms.

The Dairy Farm Retailing Its Milk in Bottles

The refrigerating equipment on this farm consisted of a dry air box of the walk-in type, using fin coils. The construction of the surface cooler was tubular, the upper half water circulating, the lower half brine circulating. A typical bacteriological and temperature study on this farm is as follows:

Bacteriological count of milk immediately after bottling ..... 37,300 per c. c.

Bacterial count of the same milk after standing 12 hours in the dry air refrigerator. A growth ratio of 1.161 ..... 43,300 per c. c.

Temperature of milk in bottler after surface cooling 50° F.

Temperature of milk in bottles immediately after bottling ..... 58° F.

Temperature of milk in bottles in refrigerator after 12 hours ..... 36° F.

Temperature of refrigerator on bottles entering and leaving ..... 34° F.

Due to the distance of this farm from Lafayette, it was found inconvenient to obtain samples of milk that had been held in the refrigerator for 12 hours, so 24-hour samples were used. It was found that in 35 samples of milk obtained during July and August of 1929, the average ratio of growth was 1.838, the highest ratio 3.428 and the lowest 1.000, showing that the bacterial growth nearly doubled on the average, while the milk was being held for 24 hours in the refrigerator, operating at 34 degrees F.

The Dairy Farm Wholesaling Its Milk in Cans

The cooling equipment on this farm consisted of an immersion type cooling tank into which the cans of milk were placed for a storage period of 12 to 14 hours. This equipment was operated at the Purdue University Dairy Barn.

The influence on the bacterial count of holding milk in a mechanically cooled milk tank for 12 to 14 hours, when using cooling temperatures of 35, 45 and 53 degress F. with the milk precooled to a temperature of 62 to 68 degrees F. by running over a water-cooled surface cooler, is as follows:

No. of Trials	Temperature of Brine	Aver. Bacterial Growth Factor
36	35	1.1733
36	45	1.1017
36	53	1.9862

It is interesting to note that the bacterial growth factor was lower

in the milk held at 45 degrees F. than at 35 degrees F. This no doubt is due to an experimental error, for the difference is slight. The significant fact is, however, that there is little difference in the increase in bacterial count of the milk while being stored at temperatures of 35 and 45 degrees F.

A temperature study of the milk held at the above cooling temperatures is as follows:

Temp. of Cooling Tank	Av. Temp. of Milk Entering Tank	Average No. Minutes Required to Cool to— 60° F.	50° F.	40° F.
35° F.	61	5	94	523
45° F.	63	45	474	...
53° F.	63	94	393*	...

* Cooled to 55 degrees F.

When the milk cooling tank was operated 35 degrees F. and 45 degrees F. the milk reached a temperature of 60 degrees in less than one hour. Bacteriologically, this is important, for milk shows little or no bacterial growth during the first hour, and a temperature of 60 degrees F. is a critical temperature for bacterial growth. There is, however, a great difference in time of the milk reaching 50 degrees F. when operating at 35 and 45 degrees F., viz., 380 minutes. When the milk tank was operated at 53 degrees F., it required 393 minutes for the milk to reach 55 degrees F.

It is considered good practice to stir milk after it has been placed in the cooling tank. In order to determine the value of stirring, the following experiment was made during the past summer. Milk was precooled to about 68 degrees F. over a surface cooler, and then placed in the cooling tank and stirred at intervals of 5, 10 and 15 minutes, the amount of stirring being the same for the seven trials conducted on each temperature.

The least difference between the stirred and not stirred is when the milk was held at 45 degrees F. and the greatest at 55 degrees F. The value of stirring is, considering the range of temperature, that of reducing the bacterial development one-half during the storage period.

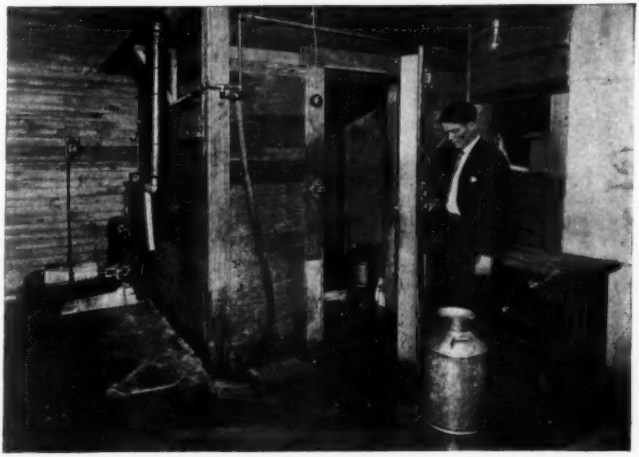
The not-stirred milk reached a temperature of 60 degrees F in 28 minutes in a cooling tank at 35 degrees F. and in 65 minutes at 45 degrees F. the critical temperature of bacterial growth being reached within the hour. It is interesting to note the little differ-

Bacterial Results

Temp. of Cooling Tank	Average Ratio of Bacterial Increase Stirred	Not Stirred	Difference
35° F.	1.039	1.558	0.519
45° F.	1.116	1.241	0.125
55° F.	1.323	2.249	0.916
Av. of all temperatures	1.159	1.682	0.523

Temperature Results

Cooling Tank Temp.	Method	Temp. of Milk Entering Cooler	Minutes Required to cool to 60° F.	50° F.	40° F.
35	Not stirred	66° F.	28	114	320
35	Stirred	66° F.	8	100	345
46	Not stirred	68° F.	65	266	...
46	Stirred	68° F.	14	217	...
55	Not stirred	65° F.	120	...	...
55	Stirred	65° F.	88	...	...



Well Built and Compact Refrigerating Room on Lackey Dairy Farm near Birmingham, Ala.

ence of time between the stirred and the non-stirred reaching 50 degrees F. and 40 degrees F. *The value of stirring is confined to the temperature reduction in the first hour.*

The Question of Surface Coolers

We have been informed that on the Atlantic Seaboard the use of surface coolers is being discouraged. In fact, some of the large buyers of milk prohibit their use. We believe that the difficulty is with the inability of the dairyman being able to satisfactorily keep his cooler in a sanitary condition.

In order to determine this point during the past summer, July 15th to August 16th, the following experiment was made. The milk was precooled over a surface cooler of the tubular type. The experimental period was divided into three parts. Part 1, in which the cooler was thoroughly washed, and left visibly clean. Part 2, same as Part 1, but

A Wide Door Facilitates the Movement of Bottled Milk, Where a Truck Is Employed.

Bacterial Results; Ratio of Bacterial Growth

Condition of Cooler	Surface Cooled	Non-Surface Cooled
Washed	5.577	2.222
Washed and sterilized	1.948	2.706
Carefully washed and sterilized	1.929	2.515

in addition sterilized by means of a chemical. Part 3, very carefully washed and sterilized by chemical sterilization.

There is a notable difference in the increase in bacterial growth during cooling in the "washed" and the "washed and sterilized," but there is little difference between the "washed and sterilized" and the "carefully washed and sterilized." Note the uniformity of growth in the non-surface cooled group.

Temperature Results

Temperature of cooler 45 degrees F.
Temperature of the precooled milk entering cooler..... 69 degrees F.
Temperature of the not precooled milk entering cooler.... 93 degrees F.

Temperature of Milk in Cooler	Time in Minutes Required	
	Precooled	Not Precooled
70° F	0	50
60° F.	77	131
55° F.	137	190
50° F.	352	345

The value of precooling milk over a surface cooler lies entirely in cooling rapidly to temperatures below 60 degrees F. There is no difference in time when the precooled or not precooled milk reaches 50 degrees F.

In the experiments given, milk of low bacterial count was used, that is, the initial count was less than 25,000 per c.c. From July 15th to August 2nd the Dairy Department purchased milk from a dairy farm. Due to personnel, the quality of milk as measured by bacterial count was poor, ranging about 300,000 per c.c. A comparison between this high count milk and low count milk was made as to growth of bacteria during storage in an immersion type cooler for 12 to 14 hours operating at 45 degrees F. The results are as follows:

Source of Milk	Ratio of Growth of Milk during storage
Dairy Barn— Stirred	2.964
Dairy Farm— Stirred	17.101
Dairy Farm— Not stirred	41.337

The milk was not precooled.

The above figures show the im-

(*Continued on page 28*)

Here's the Plant That Provides Refrigeration on the Lackey Dairy Farm near Birmingham, Ala.

Electrically Heated Poultry Water Trough with Box Side Removed, Showing Wiring and Construction Details

Poultry Water Heaters Pay

By HOBART BERESFORD,
Head Dept. Agricultural Engineering,
University of Idaho.

THERE are many simple devices used for poultry water heating. One is a small electric lamp inserted in a tin can, which has been soldered over a cut out section of the bottom of the drinking water pail. The small immersion heater and the small electric plate which just fits the bottom of a drinking water pail have also been found satisfactory.

One of the outstanding applications of electricity to poultry water heating has been made by Loy H. Lee of Middleton, Idaho. Mr. Lee used a galvanized trough 8 feet long 8 inches wide and 6 inches deep with a 2 inch flange around the top edge. One 345 watt space heater controlled by means of a thermostat that had been discarded for incubator use was placed in an airtight box underneath the trough. The construction of this box and trough is clearly shown in the accompanying sketch. An overflow drain is provided in one end of the trough by means of a screw-in pipe, which when removed permits easy cleaning. A great deal of time and labor can be saved by providing the water supply through an automatic float valve.

With the idea in mind that the temperature at which the greatest amount of water would be consumed by the birds would be the most satisfactory from the standpoint of egg production, experiments were conducted to determine at which temperature the most water would be consumed. It was found that for the first few days more water was used at 50 degrees than when the trough was maintained at 40 degrees. However, when the birds became accustomed to the warm water the consumption dropped back to the same amount consumed at the lower temperature. For this reason it was decided that there was little advantage in maintaining the drinking water above 40 degrees, in as much as there was no apparent effect on the egg production from the flocks. However a comparison of the pens receiving the 40 to 50 degree water, and the pens receiving water in which ice was allowed to form,

gave an egg production record decidedly in favor of the pens receiving the warm drinking water.

Where the drinking water was maintained between 40 and 50 degrees Fahrenheit, approximately twenty per cent more water was used than the same flock required when the water was allowed to remain at a freezing temperature During the days that the temperature of the poultry house averaged 18 degrees Fahrenheit the heating element was required to operate twenty hours out of every twenty-four in order to keep the drinking water at the required temperature. The average energy consumption for the thirty day period was 3 kilowatt hours per day. During the coldest weather (room temperature of 18 degrees Fahrenheit) a maximum of 6 kilowatt hours per day was used. The advantage of the thermostatic control, as used in connection with this poultry water heater is that the temperature of the drinking water never exceeds 50 degrees even though the water in the trough was lowered to within an inch or less of the bottom. This is not the case when the small stove type heater is used, for as the amount of the water decreases, the temperature rises until rapid evaporation occurs and there is danger of having the drinking water too warm. This may cause the litter to become damp and the house to be frosty. The disadvantage of the thermostat is the additional expense which makes its use impractical except on the large watering troughs. For the small pans or pails, the immersion or clamp-on heaters are more convenient. If these heaters are to be used with insulated pails or troughs a hundred watt element will prove satisfactory for maintaining four to five gallons of water at a temperature of approximately 40 degrees. For the very cold weather, less water can be handled by a given heating element if the 40 to 50 degree range is to be maintained.

The Reason

"Farm products cost more than they used to."

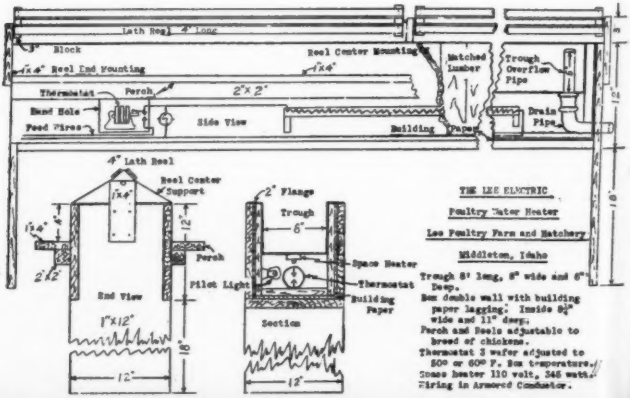
"Yes," replied the farmer, "When a farmer is supposed to know the botanical name of what he's raisin' an' the entomological name of the insect that eats it, an' the phamaceutical name of the chemical that will keep it off, somebody's got to pay."—*Pathfinder.*

Breeches

A charming wife of a French diplomat had never quite thoroughly mastered the English language.

She was urging an American officer to attend a dinner, the invitation to which he had already declined. The lady insisted that he must go, but the young officer said that he had burned his bridges behind him.

The lady misunderstood the word. "That will be all right," she explained, "I'll lend you a pair of my husband's."



Promoting Efficiency Comfort and Happiness

In the Farm Homes of America

M. S. WINDER
Executive Secretary, American Farm Bureau Federation.*

IN speaking to you I represent not only the American Farm Bureau Federation, which is now acknowledged to be the most influential agricultural organization in America, but also the National Committee on the Relation of Electricity to Agriculture, of which I am the chairman.

M. S. WINDER

This National Committee was sponsored by leaders in the electrical industry and leaders of the agricultural organizations who could see and appreciate the value of co-operation in developing new interest in rural electrification. Less than six years have elapsed since the organization of the National Committee. During that time the development in the states here represented has been remarkable.

At the beginning of 1924 in the state of Illinois there were only 2,201 farms having central station service. At the beginning of 1929 this number had been increased to 13,284 farms having this type of service.

In Indiana the figure for 1924 was 3,228, this number being increased by January 1, 1929, to the remarkable figure of 15,163.

Michigan in 1924 had only 2,996 farms provided with electrical energy but in 1929 12,500 farms were so equipped.

Wisconsin in 1924 had already made fairly good progress in rural electrification, there being at that time 7,429 farms equipped with electricity. This state, however, has experienced a remarkable expansion in the past four years; at the beginning of this year 20,885 farms being served with electricity from central stations.

Whereas the first task of the Committee was to convince the leaders of both the electrical and the agricultural industries of the value of rural electrification, the present task of the committee is to promote further use of electricity and to stimulate wherever possible the expansion of the use of this valuable force in agriculture.

It is with pride that I reflect upon my association with the National Committee on the Relation of Electricity to Agriculture. I wish to pay a tribute of sincere praise to the men who are making the work of this Committee an important element in improving the standard of living on the farms of America.

The Industrial Revolution

Not many years ago industry experienced a great revolution. The invention of machines driven by power displaced the labor of a vast army of industrial workers and many adjustments were necessary in the economic and social life of the people. These adjustments were finally accomplished and today we would not return to conditions that existed in industry prior to the universal introduction of power-driven machinery.

Back in the days before the Revolutionary War, 97 per cent of the people of America lived on

farms or in remote communities. Three per cent of the population lived in the towns and engaged in commerce and trade and in the very limited manufacturing enterprises that were conducted outside the family circle.

Just as improved machinery brought about a revolution in industry, so improved machinery and more efficient methods of operation have brought about a revolution in agriculture, and remarkable changes are under way even at the present time.

Decrease in Farm Population

Whereas, at the beginning of our national history, 97 per cent of the people lived on farms, today this proportion has been reduced to a point where 27 or 28 per cent of the population live on farms. Still we find that the reduced number of people living on farms are able to produce not only all of the food and other essential materials that are needed for the sustenance of the nation, but also huge quantities of various commodities for expert to foreign lands. As time goes on and methods of production are further improved, I feel convinced that the farm population in comparison to the population of the country as a whole will be still further decreased.

Occasionally there is raised a cry of "Back to the land." In this I do not agree. Without doubt greater efficiency in agricultural operation will make it possible for still more people to leave the farms, for those who remain will be able, with improved equipment, to produce all that a larger number were required to produce in the past. The thing that is important is that those who remain on the farms shall be among the most intelligent, letting those who are not so well equipped for the important tasks of leadership in country life be the ones to migrate to the cities.

High Degree of Intelligence Required

Today the successful operation of a farm requires a higher degree of intelligence than does the successful operation of any ordinary business venture. The farmer must understand all of the factors entering into the production of his crops. He must be something of an agronomist, understanding soil and crop conditions. If he includes in his farm program any phase of livestock production, then it is necessary that he have an understanding of animal husbandry and it would be well if he is equipped with some knowledge of veterinary science. If the growing of fruit is included in the farm program, then the farmer must be a horticulturist and in order to properly combat insect pests he must know something of the science of entomology.

Having produced his products the farmer is then concerned with the problem of successfully disposing of them. To this end, he must have a knowledge of marketing conditions and successful marketing practices. To further assure success, he must have some knowledge of finance and at least a reasonable degree of familiarity with banking practices. In many sections of the country there are the serious problems of irrigation and drainage which must be successfully met.

And so it goes—in each phase of agriculture the farmer must be equipped with knowledge sufficient to deal with the diverse problems that are presented. Often the thought comes to me that present-day agriculture involves more of the task of the engineer than just the simple cultivator of the soil.

Electricity to Play Big Part

In the development of the manufacturing industry, electricity has played a tremendously important part and so in the further development of the agricultural industry, we anticipate that electricity shall play an equally important part. The extension of power lines has provided the means for greatly improving farm practices in many districts. Quite recently there came to my attention a very critical article published in a current newspaper. This article expressed disappointment in the fact that thus far the relationship of electricity to agriculture had provided only light and power for the farms and had failed to provide any other functions. So

far as I am able to discover, the important function of electricity in other industries is to provide light and power so that it seems to me very far-fetched that a demand should be made that electricity supply to agriculture some service beyond that which is supplied to other industries. I presume that the writer of this article had in mind some of the experiments which have been undertaken to determine the value of electricity in soil treatment and as an aid to cultivation. This matter is, of course, interesting and at some time in the future may prove to be highly significant. However, I feel that we cannot be disappointed if electricity should provide to agriculture only the important services of light and power.

Some Specific Examples

From personal experience in owning and operating a dairy farm, I have a high appreciation of the importance of electrical energy. I would like to recite for you some of the things that electricity is doing on that one farm.

For many years we have grown considerable quantities of alfalfa hay to feed to our livestock. The feeding of alfalfa has always been attended with considerable waste. To overcome that, we conceived the idea of chopping the hay into fine particles, then feeding it in mangers much as grain would be fed. To accomplish this, we purchased a hay chopper. We have discovered that the ideal power for operating this equipment is an electrically driven motor. At an amazingly low cost of 37 cents a ton we are able to chop our hay, thus making it more palatable and saving the waste which in former years had made our feeding operation rather extravagant. Not only have we succeeded in eliminating waste in feeding, but we have found that the hay is more nutritious, the livestock digesting and assimilating this food more readily.

Another factor which was not at first contemplated is the fact that we are able to store approximately three times as much chopped hay in our barns as was the case before we found the value of chopping this feed. This, in itself, is an important factor as it relieves the necessity of either building more barns to hold the hay or of stacking the hay out in the weather, from which practice a good deal of waste always results.

Through using electrical power to operate our milking machine, the task of milking our dairy herd has been made much lighter. Electricity is the ideal power for operating this equipment since it is dependable and steady. In the dairy itself, electricity is used very extensively. It is indispensable in providing adequate refrigeration, in driving the washing machinery with which cans and bottles are cleaned and sterilized; it is used in pasteurizing machinery, for each of these operations supplying the most dependable power that can be found.

The task of separating milk in former times was a tiresome and monotonous one but now electricity takes all of the monotony out of this job for it provides the power for turning the separator just as it does for operating equipment in the machine shop.

Pumping Water a Tedious Task

Years ago I recall spending hours in pumping water for our livestock. This was a tedious task—hard work and tiresome. Now, through the installation of an electrically operated automatic pump, water from a deep well is available at various advantageous points about the farm. No longer is hand pumping necessary and an adequate supply of fresh water is available at all times by merely turning a faucet, as one can do when supplied from a city water system.

In the poultry houses, electric lights are provided, equipped with an automatic attachment which causes them to be turned on at an early hour each morning through the fall and winter so that the hens may begin their day's work in good season. Experience indicates that this simple practice of providing morning light for laying hens substantially increases egg production.

When we think back to the days when early morning work about the barns was done by groping our way through the darkness or carry-

ing an inefficient and somewhat dangerous lantern, we fully appreciate the advantage of merely turning a switch and finding our barns and corrals flooded with light. Every barn and stable in which early morning or late evening work must be done through the winter time is equipped with electric lights, thus providing a maximum degree of convenience in our operations.

Although this extensive use of power adds a substantial expense each month, it has proved to be really economical. It is not unusual for power bills to run from thirty to forty dollars per month, but when you consider the fact that the use of power and a considerable number of labor-saving devices have made it possible to dispense with the services of one competent man and have so increased the efficiency of our operations that much more is accomplished each day by those regularly employed and more time is provided for leisure and for pursuing other interests, you can readily see that the extensive use of electricity is, after all, a good investment and represents a very substantial saving.

Rescuing an "Unfortunate Drudge"

Unlike other industrial activities, farms cannot well be separated from the farm home and here again we find the use of electricity a most important factor. In times past, the farm woman has often been looked upon by her sister in the city as an unfortunate drudge. We must confess that in many cases this has been true. However, we have found that electricity is an indispensable factor in the modernization of the farm home, and with electrical refrigeration, the electrical range, the electric iron, washing machine, vacuum sweeper and other electrically operated equipment, the tasks that have been most burdensome are so lightened that the life of the farm woman can no longer be called one of drudgery if her home is equipped with electrical appliances.

A movement in which you will all be interested is one which is just now being launched by the Farm Bureau in which we hope to call the attention of all the farm people of this country to the need of farm home modernization. The ideal of the Farm Bureau has always been "an adequate standard of living in the farm home and the income from the farm to pay the bill." We believe that we stand today on the threshold of a period of prosperity and it is our desire to see the increased income on the farm devoted to improving the standard of living in the farm home.

Without question, the improvement of the standard of living of every farm home must include the installation of electricity and the equipping of the farm home with necessary labor-saving devices. The farmers and the farm women of America are interested in rural electrification. This interest is being extended and developed by the Farm Bureau and will receive greatly increased influence through the movement which we are now launching for farm home modernization.

The work which is being conducted by the National Rural Electrification Project at College Park, Maryland, under the patronage of your organization is greatly appreciated by us. We feel that the experiments which are there being made are of great significance to farm people. We trust that your interest and support of this project will continue unabated and that in years to come farmers of America will receive the benefits of the work which is there being conducted.

We appreciate the interest of the power industry in this—our joint problem. We are convinced that the use of electrical energy can and will promote efficiency in our agricultural operations and in addition to that, it will mean greater comfort and happiness in the farm homes of America.

We hope to cooperate with you in further increasing the well-being of agriculture and the farm home by extending the use of electricity into every available rural community.

Acknowledgment: Abstract of paper presented before Great Lakes Div., N. E. L. A., at French Lick, Indiana.

Gumming a Saw for Cordwood, Poles and Logs

Bringing the Buzz Saw Back to Its Best

By L. M. ROEHL

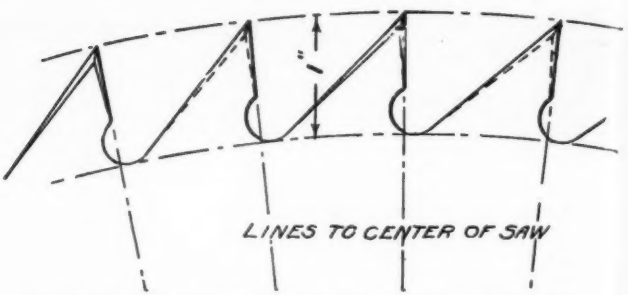
IT is an easy and interesting job to true up and gum a circular saw with a motor driven grinder. But first a tool rest must be built at a height to place the saw on a line with the center of the grinder. It is essential that the top of the rest be at the same level as the center of the stone so as to grind the bottom of the gullets square with each side of the saw. This causes the saw dust to be driven out of the saw kerf. If the bottom of the gullet were ground at a slant or angle to the side of the saw, there would be a tendency for the saw dust to crowd out of the saw kerf at the sides and cause the saw to bind and pull hard.

Truing Up the Saw

To cut right, the points of all the teeth must be exactly the same distance from the center of the saw. That is, the saw must be trued up or jointed. This may be done by placing the saw flat on the platform with the center in a fixed position and then turning it slowly by hand against the grinder thus taking off the points of the teeth. This must be continued until all points of the saw have been ground to the same distance from the center as that of the shortest tooth. This work is done with a regular grinding wheel.

Saw teeth are made to many shapes, each shape for a particular kind of work, and directions for shaping one are incorrect for another. The following directions are for cord wood saws such as are used in farming for "buzzing up wood." The line drawing shows the shape of the teeth as these saws are made. It will be noted that the front of each tooth is on a line to the center of the saw.

The gumming wheels are made ¼", ⅜", and ½" thick. The ⅜" thickness is best suited for most saws. In gumming, the saw is so placed on the table that the gumming wheel aims about a third of the distance from the rim to the center of the saw. In doing the gumming the saw should be held against the grinder lightly so as to prevent the blade of the saw from



The Shape of the Teeth of a New Saw for Cordwood, Poles and Logs

becoming heated. If there is a tendency for the saw to heat, a little grinding is done at one gullet and then the saw turned to another place, allowing the saw to cool as the work proceeds.

In a test that the writer performed on a 26" saw which was in about as bad a shape as this sort of a saw is allowed to get, the saw was trued up and gummed so that all teeth were ground out to a uniform shape and to a depth of ⅞". The work was done with a quarter-horse-power motor in less than one hour.

Milking Machines

(*Continued from page* 16)

2. Repeat the rinsing process, using hot water and a good washing powder. This time wash the teat cups and tubing with a brush.
3. Rinse the machine again with clean hot water, still using the vacuum to draw the water through all the parts.
4. Then detach the tubes from the pail head, plug the air tubes, if there are any, and submerge the cups, claws, and tubes in water heated to 160°-170° for 20-30 minutes. If the vessel in which this sterilizing is done can be covered, it is a good place to leave the parts until the next milking.
5. Twice each week take the machine entirely apart and brush all the pieces thoroughly with hot water and washing powder.
6. Clean the moisture trap or check valve on the head of the machine every day.
7. Wash the pails and covers after every milking, first with luke warm and then with hot water,—just as cans, strainers and other metal milk utensils are washed—and sterilize them either with steam or boiling water.

Mechanical Refrigeration

(*Continued from page* 20)

portance of lowering the temperature of high count milk as rapidly as possible. The bacteria in such milk are in an active stage of growth and this growth must be rapidly checked by low temperatures.

Summary

1. That the milk stored 24 hours in a dry air type refrigerator operating at 34 degrees F. showed a bacterial ratio increase of 1.838.
2. That there is little difference in the increase of bacterial growth in milk when stored at 35 or 45 degrees F.
3. That stirring the milk at intervals of 5, 10 and 15 minutes after being placed in the cooling tank was advantageous in reducing the bacterial growth during storage.
4. That the use of surface coolers which are *washed* and *sterilized* reduced bacterial growth. Where the surface cooler was *only washed*, growth was not retarded.
5. That for milk of low bacterial content, the rate of bacterial increase during storage was less than milk of high bacterial content.

ELECTRICAL HOUSEKEEPING

Conducted by GAIL MEREDITH

The Christmas Carols

I VISITED a home in New Orleans a month or two ago where reading aloud is not a forgotten practice. Five year old Marcia crowded against her father to peer over his arm at the pictures while he read her favorite story "How the Camel got his Hump."

So eager was her interest that every now and then the familiar words of the story tumbled from her tongue if her father stopped for breath.

In the summer time when I visit my own little nieces and nephews they clamor to have me read aloud.

Margaret loves "When we Were Very Young" and "When we Were Slightly Older." Her big brother has read them to her so often that she almost knows the poems herself. Dean, however polite, has a slight masculine scorn for poetry and courteously urges me to read "Ali Baba and the Forty Thieves."

Which just emphasizes the point that no matter how our family customs change, how we drop this reading aloud before our firesides, or around the kitchen table, children do not change so much. They still love stories. They love to have them read aloud.

Someone will do this for you over the radio, to be sure, just as someone teaches your child for you day after day in the public schools. But there are some things you teach your child yourself, and there are some things you may want him to hear that will not come over the radio this Christmas time because they are too long for any program.

One of them is a Christmas story that belongs by right to every English-speaking child in the world, Dickens' *Christmas Carol.* If he never hears it, and never learns to love it, one tiny, but important, part of his great legacy from the past is unclaimed.

We Interrupted a Story Here

I myself grew up with a worn and tattered copy of Kate Douglas Wiggins' "Bird's Christmas Carol," a weepy little tale redeemed from too pathetic sentimentality by the vigorous Ruggles family.

If I were to read it to Margaret and Walter and Dean this Christmas time, I'm inclined to think I'd cut it shamelessly and read them only the part about getting the little Ruggleses ready for the Christmas party.

But I would read them all of Dickens' *Christmas Carol,* and when they tired sometimes of chanting

"'Twas the night before Christmas"

I'd try "The Other Wise Man" by Van Dyke.

I'd like them to learn to love both of these pricelessly lovely contributions to our literature of

Here They Are: Santa Claus Apples

Christmas just as they love the one beginning,

"Now when Jesus was born in Bethlehem of Judea in the days of Herod, the King—"

Santa Claus Apples

IF you want to make the decorations for your Christmas dinner table most unusual and gay, here are some Santa Claus apples for you to try this year.

Making them is simple enough. You need only a red apple for Santa's body, a marshmallow for the head, a scrap of red tissue paper for a cap, and a little cotton for the fur on his coat.

You get the paint for his face by moistening a little cocoa, and dissolving a few red cinnamon candies in half a teaspoon of warm water. Then with a toothpick for a paint brush, you give him melting brown eyes, with the cocoa, and a nice red mouth and nose, with the colored water, but you had better take a wad of cotton to smear a rosy glow on his cheeks.

Then you put one end of a toothpick in the marshmallow and the other in the top of the apple. That holds his head firmly in place.

Next cut a strip of cotton half an inch wide and wind it around the marshmallow for a warm fur collar. Pin it into the apple with an ordinary pin, then draw it down the front and around the base, pinning it here and there to keep it in place. You can fluff the cotton up to hide the heads of the pins.

Then you have only to make a tiny paper cap, topped with a saucy ball of cotton and pin it firmly to the marshmallow. That finishes Santa Claus off in great style.

Christmas Lists

ONE day last December I was sitting at my husband's desk when his telephone rang. There was no one else in the office so I answered the call.

"Can you tell me," a pleasant voice asked, "whether there is a line along the Acre's road north of Sun Prairie?"

I called up all the various departments that might trace those lines for her and found after detailed search that there was no line along the Acre's road north of Sun Prairie.

By this time my husband had come in and undertook the job of calling up the pleasant voice and telling her so.

"Oh, I'm so sorry," came the answer. "I thought if the line had been built out there, we could give my aunt something electrical for Christmas."

We were somewhat surprised to discover we had been scouting in the interests of Christmas lists, but we sympathized with her courteously and said goodbye.

And instead of a percolator, or a waffle iron, a curling iron or an

electric fan, she probably gave her aunt a set of colored sheets and pillow cases, or a hooked rug. I know it was something lovely and modern. She sounded like that sort of a person. That is why she was exploring electrical gifts in the first place, I suppose, because she was as alert to fashion trends in household gear as to the styles in hats and shoes.

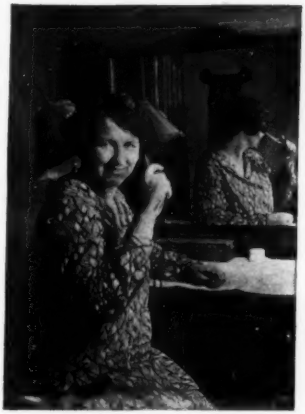
Not all women are.

Yet styles in household equipment are extremely important in modern living. They affect the way we do our job. Of course, that is their first function, but they also reach out and adapt themselves to the latest styles in courting and become one of the reasons why folks stay home at night.

Every now and then I catch myself saying to Dorothy before what she calls her "date" arrives:

"Wouldn't you like to make some fudge, dear?"

And then if I have started, I have to switch right in the middle and ask her something else, anything I can lay my tongue to, for I suddenly remember that while making fudge in a chafing dish used to be a highly satisfying pastime for my buggy riding days, it just is not done that way anymore. Not that fudge has gone out of style, nor that young folks like it less;



Mrs. McCutcheon Kindly Showed Us How Her Electric Curling Iron Works

they are just politely indifferent to it as a form of entertainment.

I doubt if Dorothy would really recognize a chafing dish if she saw one, and I know she couldn't work it. She is used to pushing buttons and turning a switch instead.

She rolls up the rugs and turns on the radio and she plugs in the electric percolator to make a fragrant cup of coffee, and gets out

The Coffee Is Hot and the Toast Will Come Out in a Minute

the electric toaster to brown a pile of toastwiches for her parties.

If you have children the college or school teaching age, they'll be coming home this month for an all too brief vacation. They will probably be rushing about to parties and shindigs half the night, and sleeping half the morning, so if you want to get a real good look at your young folks yourself, you'd better see to it that your house is one of the centers where the crowd drops in for a noisy, merry evening.

A cordial welcome, a little good food, a little music, and—self-effacing disposition on your part ought to effect this.

A boy I know who got an electric corn popper for Christmas dragged in half a dozen young chaps during the rest of the vacation to pop corn.

Since all they had to do was plug in the cord, press a button, put the corn in the little round popper, and turn the knob in the cover, when it began to pop, they had plenty of time to talk. His mother kept a little pitcher of melted butter ready, and the salt shaker always full, so the boys stretched their long legs toward the open fire, crunched crackly corn in their strong young jaws, and talked out loud the long, long thoughts of youth.

His mother told me that they felt better acquainted with Tom when he went back to school than they had for years.

Do not understand me to suggest that a corn popper is a magic key to a young man's confidence. It just turned out to be one of the reasons why men stay home.

Mrs.: "Where have you been all evening?"
Mr.: "At the office."
Mrs.: Then you must be made of asbestos. Your office building burned down two hours ago."

Ad. Told the Story

After a dull forenoon in cantaloupes, a grocer's boy was told to mark them down for quick sales. The boy thought he could get up a snappy placard and was told to go ahead. He produced the following:

CANTALOUPES
Were 20 cents, now 10 cents.
Pretty soft for you!

Individual Sheller Permits Timely Shelling

Although corn shelling has never been the rush season job that threshing was, it is often necessary to arrange as much as two weeks in advance for the job shellerman to come. Waiting for a shelling crew may force one to take a lower market price, when immediate shelling and delivery would permit selling at the peak of the market. Many corn growers have found that small, individual shellers provide a means of shelling their corn at low cost.

The latest models are made largely of steel and easily operated with 5 to 10 horse-power motor. This type sheller is strongly built and the feeding and shelling parts operate simply so that they are easily understood by the owner or operator. A small machine will shell from 75 to 125 bushels per hour.

The Advantages of AC Receiving Sets

With the introduction of AC radio sets the question of whether to buy one of the electrically operated makes or another of the battery sets has been a matter for consideration in many families.

To the farm family to whom 110 volt AC current is available the set that requires only an outlet to plug into offers many advantages. A most exhaustive survey by one of the country's largest manufacturers of both battery and AC sets discloses the fact that AC sets cost only one-twentieth as much to operate as the battery variety.

The quality of reproduction is better with the AC set and at the same time the initial cost of similar sets is less in the case of AC than battery-powered sets.

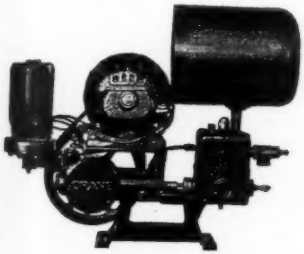
In addition, the AC type receivers require less care, are more convenient, offer a much larger variety to choose from and present a far better appearance. An additional advantage is that they are more compact and may be easily moved about.

Give her running water

for many Merry Christmases and Happy New Years

Of course, she'll like whatever you give her. But she'll like it all the better if your present shows forethought for her happiness. You can make her Christmas a memorable one by giving her something that she will use every day in the year and rejoice in every time she uses . . . running water.

To her it will mean no more lifting of buckets, no more tedious pumping, no more time lost going to and from the well. To you it will represent an investment that will pay for itself in a short time.



This Crane Water System is Timken Bearing equipped. Its cost is little more than that of the few knick-knacks you would ordinarily buy. Talk to your plumber while Crane Co. can still promise Christmas delivery.

CRANE

GENERAL OFFICES: CRANE CO., 836 S. MICHIGAN AVENUE, CHICAGO

NEW YORK OFFICES: 23 W. 44th STREET

Branches and Sales Offices in One Hundred and Ninety Cities

Write for the interesting new booklet, "Bringing Health, Comfort, and Larger Profits to the Farm." Also ask for the complete catalogue, "Crane Automatic Water Systems."

Questions and Answers

Conducted by H. J. GALLAGHER

Note—Readers are invited to send in questions which will be answered in the order received. Names are omitted from questions unless otherwise specified.

Question: *"I expect to have electric service on my farm before Christmas and this winter I hope I will not have to fight with the gasoline engine to pump water, but after the expense of getting electricity and wiring the buildings, I do not feel able to buy a water system. I have a good windmill pump and pump jack, how can I use these to best advantage until I can better afford a water system? What size pulleys should I use on the pump jack and motor?"—H. C. M., Wisconsin.*

Answer: Your question is in the minds of a number of farmers who have just received electric service and cannot afford to buy all the equipment they want at one time. There are many ways electric power can be used on equipment you now have by giving the subject some study.

It is possible to use your pump jack in combination with an electric motor and have running water in the house and for the stock tank. Undoubtedly you already have a pipe line from the pump to the stock tank. I would suggest that you put a tee on this pipe in the well pit and run a line of pipe below frost line to the kitchen sink. This same pipe line can be used later when you put in a complete water system. You now have a pipe line running from the stock tank to the kitchen sink. On the low end of this pipe line install a gate valve or faucet, leaving the high end, usually at the sink, open. Belt an electric motor to the pump jack, install a switch at the stock tank and one above the kitchen sink so that either switch will operate the motor. These are known as "three point" switches. This combination will pump water at the sink or stock tank by pushing either switch. The valve on the low end of the pipe line guides the flow of water where desired.

Your pump should operate at about 40 strokes per minute. The gear reduction of the ordinary gas engine pump jack is four to one. A 1½ inch pulley on the motor and a 16 inch pulley on the jack would pump at the right speed. A one-quarter horsepower motor would lift water eighty feet through the ordinary pump when not pumping against pressure as through a pressure tank.

Question: *"I am going to install a pressure water system on my farm of 160 acres. To have running water in the house and barn what size pump and storage tank should I use?"—F. J. D., Michigan.*

Answer: The size of the pump and pressure tank to use for farm water systems depends upon the well from which the water is pumped. For the well that furnishes a good supply of water, a large pump and small storage tank are the most satisfactory. The pump should be large enough to supply all of the water needed on the farm and afford reasonable fire protection. The size of the pump will vary as to different requirements but the minimum capacity should be 440 gallons of water per hour. With a pump of this type, the pressure tank merely acts as an air cushion to operate the switch controlling the motor and should be about forty gallons size.

On wells that will not supply water at the rate of 440 gallons of water or more per hour, it is necessary to use smaller pumps. A number of small pumps now on the market are rated at 220 gallons of water per hour. Water pumped at this rate is too slow for the average farm use unless a supply is kept in storage. Pressure tanks with small pumping units range in s

Running Water
The finest Gift of all!

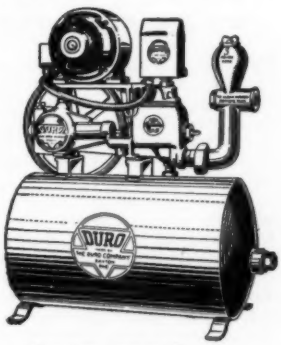
"Merry Christmas, Mother." And what a happy Christmas morning it is on this farm. A Duro Water System was installed just a few days before—Dad's gift to Mother and the farm. An automatic, carefree Duro Water System that will benefit every member of the family every day in the year—the finest gift of all.

It's easy to own a Duro Automatic Water System. You can buy a complete Duro System for a small first payment and then regular easy payments.

Only in Duro can you get Convertibility. You can install a low cost Duromatic Water System now, and later when your requirements increase, it is necessary only to install the next size motor on the pump for greater capacity.

Send the coupon for illustrated catalog

THE DURO COMPANY
537 E. Monument Ave. Dayton, Ohio



Complete, automatic, electric, Duromatic Water System, 250 gallons per hour.

Cut off and Mail

DURO Automatic WATER SYSTEMS

THE DURO COMPANY, 537 E. Monument Ave., Dayton, Ohio

Please send me full information on Duro Water Systems, and free advisory service on m requirements.

Name..... Address.....

With General Electric Motor

Your Washing Done

For the price of two 2-cent stamps

THIS is a message to every farm woman who is making the great sacrifice of health for the sake of a few cents a day.

It isn't worth the price! The day of back-breaking drudgery on the farm has passed.

The originator of the electric washing machine offers you the fastest, most modern washing machine on the market. It does *all* the work. It washes a tub-ful of clothes sparkling clean in 5 minutes. It has fewer moving parts than any washing machine on the market. No belts to slip and break—nothing to get out of order.

And this is the lowest priced quality washing machine on the market. We will gladly mail you fully illustrated booklets on all Thor products. Write to

THE HURLEY MACHINE CO.
22nd Street and 54th Avenue
Dept. E-12 Chicago, Illinois

from 200 gallons to 800 gallons, depending upon the demand for peak conditions.

Question: *"Can I operate a 5 H.P. motor on a two wire 30 ampere service? My neighbor says my service is too small but the electrician who wired my farm said it would be large enough. I want to use a 5 H.P. motor for feed grinding, buzzing wood, and silo filling."—J. F. W., Ohio.*

Answer: A two wire 30 ampere service switch is too small to operate a 5 H.P. motor. In the first place, a two wire service such as you describe only permits of 110 volt service and many power companies limit the size of motor to ¾ H.P. that can be used on 110 volt service. A 5 H.P. motor on 110 volt service, operating at normal load, would require about fifty amperes, which is nearly twice the capacity of your service.

A three wire 30 amperes service would furnish 110 and 220 volt service but would still be too small to operate a 5 H.P. motor. A 5 H.P. motor on a 220 volt service requires 25 amperes for normal load, but it would take more than 30 amperes to start the motor. This means that when the motor was started the main fuse in the 30 ampere service would be blown.

A 60 ampere three wire service is the minimum that should be installed for 5 H.P. operation. The 60 ampere fuse on 220 volt service provides ample capacity for starting the motor as well as for peak conditions of overload such as the motor will be called on to deliver for such jobs as silo filling.

Local electricians may make erroneous statements to more easily sell a job of wiring. A farmer should always confer with his power company before letting a wiring job.

Hurrah for Publicity!

BIRTHS

To Mr. and Mrs. William McClellan, Route 30, a daughter, Clarice June.

To Mr. and Mrs. John Sundseth, 953 Lincoln Avenue, a son, Kenneth Ralph.

For best results try a News want ad.—*Beloit (Wis.) News.*

Purnell Urges Modern Methods

"MORE is involved in the rural electrification movement than the mere sale of electric current to the farmers by the power companies," said Congressman Fred S. Purnell of the ninth Indiana district, in an address before the rural electric conference at Purdue University.

"For the past ten years, we have been seeking a way to put agriculture on an equality with industry. Let me remind you that electricity is the universal power for industry and that it has made possible the marvelous development we have witnessed in manufacture in this country. Agriculture must follow the lead of industry in this regard as well as others if it is to succeed.

My own study of this question has convinced me that the introduction of electricity into the activities of the farm is almost invariably followed by improved home conditions as well as increased profits.

"Indiana has 195,786 farms. Only 15,163 or 7.74 per cent have electric services. I firmly believe that when the majority of Indiana farmers accept the use of electricity, we shall see an improved morale as well as an increase in profits which will exceed our most enthusiastic expectations.

"My personal study of the farm relief problem has convinced me that one of the causes of the present inequality of agriculture lies in the fact that we have expected too much of the individual farmer. He must be a super-man to prosper as we would like to see him prosper. He must know what to plant, how to plant and when to plant. He must be an expert on seeds and soils. He must be his own veterinarian as well as his own mechanic. He must be a bookkeeper and a banker and, above all, be able to match his wits against the highly organized group which purchases his products. How can the average farmer give his attention to the management of his business if daily drudgery and detail consume the greater part of his time and energy?"

Now

Equipped with gas engine for homes without electricity

a Washing and Ironing Machine Combined

At a price formerly asked for a washing machine alone

WOMEN on the farms—you can now be rid of the drudgery of both washing and ironing, and pay no more than you have been asked for a good washing machine.

The Hurley Machine Company has just perfected this complete laundry unit—the first and only machine of its kind. It combines the Thor Agitator—world's most thorough and efficient speed-type washer—with the New Thor Rotary Iron, that does your ironing in one-fifth the time required by hand.

The Thor name on this new laundry unit is your assurance of lasting satisfaction. Write us for illustrated booklets describing this and other Thor home laundry equipment.

THE HURLEY MACHINE CO.
22nd Street and 54th Avenue
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Solving the Labor Problem *by Motor*

By EVERETT GILL

AT the farm of George Henning, Salem, Michigan, the silo filling problem was handled again this Fall as it was in 1928, with a 5 H. P. motor.

Mr. Henning, who farms 420 acres and feeds, normally, from 200 to 300 head of steers, has always believed that silage had an important place in his feeding program, both from the standpoint of low cost and results produced. For some time he had been perplexed with the problem of labor, and the uncertainty of custom filling outfits when the proper time came to get the corn into his two silos. To fill with the custom outfit of course meant a considerable cost for the machine and crew in addition to exchange of labor which also ran into terms of money as well as inconvenience at a time when fall plowing was at hand.

Says Mr. Henning to Mr. Gill, "The less machinery I have around the place, the better I like it. That's why electric motors suit me better than engines. Just start them up and no monkeying to keep them going."

In the Summer of 1928 he decided to try out the operation by electricity, and to that end purchased a 5 H. P. motor and a well known make of cutter box. Now, Mr. Henning doesn't like machinery as do some farmers who are perhaps more "mechanical minded;" he says so himself, and adds that "whatever machinery I have to use on my farm must be as near self-operating as possible."

So from this viewpoint, and with no previous experience with an electrically driven cutter, he started the 1928 work. He had read that better results were obtained by reducing the speed of the cutter considerably lower than the speed generally recommended by the manufacturer, or about 500 r.p.m. To this end he secured a 20" cutter pulley from the dealer who sold him the machine and so was able to get the proper speed on the cutter with the use of an electric motor operating at 1,750 r.p.m.

As labor at that time was hard to get, the job was done by 3 to 4 men and 2 teams and so was almost entirely handled by Mr. Henning and the help he normally employs.

When silo filling came along this year permission was given the writer to assist in the operation and note such data as might be of interest to farmers who have electric power available, but are still skeptical of the ability of a 5 H.P.

OAKES ELECTRIC BROODERS

THE SURE, EASY WAY TO RAISE HEALTHY CHICKS

Here's the latest, most economical brooder for raising flocks of from 100 to 650 strong, healthy chicks. Proper temperature is automatically maintained by fool-proof thermostat and heat evenly distributed under entire canopy. There are no lamps or stoves, under the canopy to use up space, crowd chicks or cause a fire. Brooder is quickly installed by plugging cord into light socket and adjusting thermostat switch for desired temperature.

Economical Automatic Fumeless—Safe and Sure

Oakes Electric Brooders are made in the following four sizes:

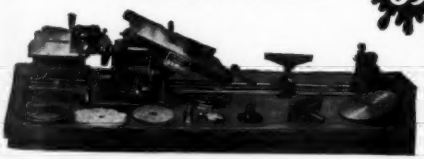
Cat. No.	Size	Chick Capac.	Wt.	Each
G-90	22-in.	100	15 lbs.	$10.50
G-91	32-in.	250	35 lbs.	16.00
G-92	42-in.	425	70 lbs.	20.00
G-920	52-in.	650	100 lbs.	24.00

Canopy and legs are built of heavy, durable galvanized steel. Heat loss is practically eliminated by using Insulite and Celotex insulation in the top.

You can get Oakes Electric Brooders from your electric appliance dealer, public utility company or poultry supply dealer. Write for literature.

OAKES MFG. CO., 77 Dearborn St., Tipton, Ind.

COMPLETE $89



LOW PRICE
Includes all this:
4" Planer
8" Circular Saw
6"x36" Lathe
6" Disc Sander
6" Buffing Wheel
8" Emery Grinder
¼" Drill Chuck
¼-H.P. G. E. Motor, 110-Volt, A.C., 60-Cycle
Endless V-Belt, two 4" and one 2¼" V-Belt Pulleys. Cast Iron Sub-base and 10 ft. Cable with separable Plug.

WORKACE Electric WOODWORKER

Recognized everywhere as the standard outfit for home and commercial use!

The most complete all-electric woodworking shop made. It's guaranteed for one year against defective parts. Fast, accurate, powerful and easy to work with; makes everything out of wood. Nothing like it sold or advertised. Send for complete description.

EASY TERMS:
$9 down
$9 per mo.

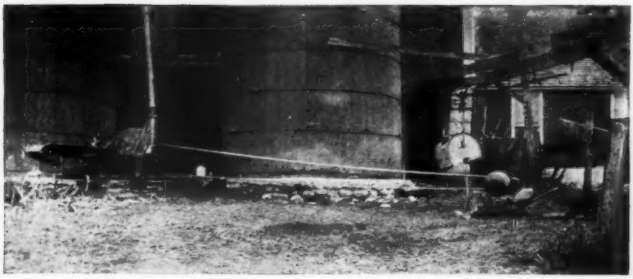
JIG SAW ATTACHMENT $10.

J. D. WALLACE & COMPANY,
2848 West Adams Street, Chicago:
11 West 42nd Street, New York City
268 Market Street, San Francisco.

I want to know all about the Workace Electric Woodworker.

Name .....

Address .....



Here's the 5-H.P. Set-up Employed by Mr. Henning in Filling His Silos.

motor to successfully handle some of the major jobs of farming heretofore believed to be possible only with large steam or gasoline driven outfits.

The same equipment that did the job in 1928 was used this year and the labor problem was even more difficult so that part of the time Mr. Henning was assisted by only one man. The two of them handled the hauling in this manner: two wagons and a Dodge-Graham truck were driven to the field, a distance of 100 to 120 rods, loaded and driven back to the cutter, one man driving the truck and one team being led behind the other. The corn was then fed through the cutter and the operation repeated.

In this way each 12' x 30' silo was filled in a period of three days, the work being done without steady operation but whenever it could be taken care of without interfering with other daily farm tasks; without extra hands to provide for at meal time, and without exchange of labor.

Neither in 1928 nor 1929 was the corn tramped in the silos, and it is worth noting that the silage fed out of both silos last winter was uniformly good. Only enough distributor pipe was used to pitch well over the top and downward into the silo; where there was a tendency to pile up, one man went into the silo and leveled the surface two or three times each day.

I believe that Mr. Henning's problem of silo filling is in no respect different from that of thousands of other farmers who may—yes, who will—in time turn to electric power for their solution.

A record meter installed in the motor circuit at the barn showed a total power cost of $2.17 for each silo.

This operation was in no sense a "demonstration," but a regular annual task and to Mr. Henning a task satisfactorily accomplished.

Thrift

A school teacher, seeking to provide for her scholars an object lesson in thrift as part of Thrift Week observance, gave to several of them at the close of school one afternoon a dime apiece, with instructions to spend the coins. She told them that to the one who, next morning, should demonstrate that he had obtained the greatest value for his money, she would give a prize.

A young red-headed lad was the first to report at the appointed time, and he laid a dime on the teacher's desk.

"But, Jamie, I told you to spend it," the teacher reminded him.

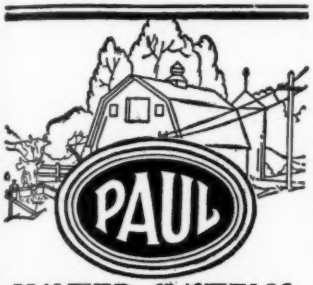
"It's been spent," he replied. "I took the dime to our grocer last night and bought a ring of Bologna sausage. I untied the ring at the end, scraped the meat out of the inside, and we all had it for supper. Then I blew up the casing with a bicycle pump and the baby played with it all evening, thinking it a toy balloon. This morning I filled the casing with sawdust and a piece of old Limburger cheese, took it to the grocer, told him it was spoiled, and got my money back."

The Heart of It

A school teacher had been attempting to drill a class of little negroes to memorize "Be not afraid, it is I."

Teacher (on the following day): "Sam, what was the quotation I taught you yesterday?"

Sam: "Don't get skeered, t'aint nobody but me."



WATER SYSTEMS
Increase Farm Profits!

A LITTLE Paul electric pump will deliver *more water for a cent than a man can pump and carry in an hour.* Plenty of fresh, clean, cool water for kitchen, dairy and barn! *What a relief from back-breaking labor!* Facts prove, too, that ample water supply greatly increases profits from live stock, dairy and poultry.

If you do not have an efficient water system, you are not getting the most from farm electricity. Write us today!

FORT WAYNE ENGINEERING & MFG. COMPANY
FORT WAYNE INDIANA
Pumps & Water Systems, Softeners, Heaters

Fort Wayne Engineering & Mfg. Co.,
172 N. Harrison St. Fort Wayne, Ind.
Send complete information and prices on Paul Water Systems.

Name_____

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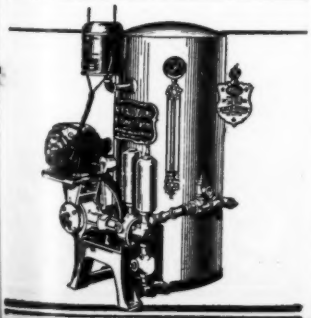
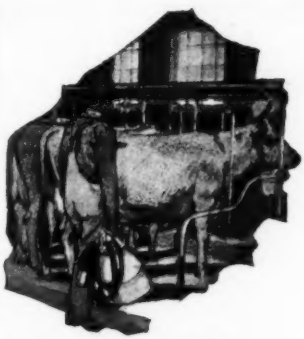




Increase Milk Production 15 to 25%

✦ ✦ ✦

Milk 3 Times A Day with the De Laval Magnetic Milker

IT is well established that 3-times-a-day milking will increase milk production 15 to 25%. Due to the saving in time and labor made possible with the De Laval Magnetic Milker, this can be done with half the help required by twice-a-day milking by hand, and often in less time. This is a splendid method of securing extra profits.

Electrically operated De Laval Milkers are both efficient and economical.

And Get All the Butter-Fat With a De Laval Separator

Cooperate with your cows and get every bit of the butter-fat that they can produce. No separator skims as clean as a De Laval and none lasts so long. De Laval Separators can be equipped for electrical operation and make separating but the matter of throwing a switch.

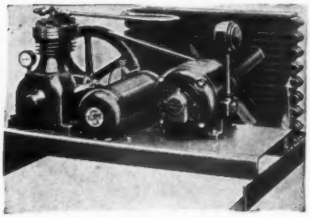
The De Laval Separator Co.

New York 165 Broadway — Chicago 600 Jackson Blvd.
San Francisco, 61 Beale St.

ADD DAIRY REFRIGERATION

. . . get more money for next summer's milk

Glenn Special Refrigeration Units for Dairy Farms are sweeping the country because they enable the farmer to get Grade "A" prices for his milk and cream.



Glenn Dairy Icer

$370 Installed

"A machine that will do the work . . . at a price you can afford to pay."

The above quotation having originated with our first customers just naturally is the voluntary expression of every Glenn user.

A Profitable Investment

1. **Better prices for your milk.**
2. **Elimination of ice expense and labor of handling same.**
3. **Costs only 3 cents an hour to operate.**
4. **Will cool 30 cans of milk.**

Capacity Is What You Want

The Glenn Dairy Icer is especially designed for farm refrigeration with a capacity equal to 900 lbs. of ice melting in 24 hours. Air cooled . . . nothing to freeze up. No attention required other than oiling of motor once a month. Choice of gas engine or electric motor for power.

Write for **free**, working plan of modern, insulated cold box, cold room, or cork insulated concrete tank. Also, ask for prices on "knocked down" cold boxes.

Write for Our Attractive Dealer Plan

Dairy Refrigeration Co.

Incorporated

Manufacturers of refrigeration equipment for every purpose

Dept. G

311 64th Avenue Milwaukee, Wis.

5 Horse Power Century Type RS Repulsion Start Induction Single Phase Motor

Century

Farm Motors

For more than 25 years, Century Motors have been demonstrating their real value and "Keep a-Running" ability in farm service.

CENTURY ELECTRIC CO.
1806 Pine St. St. Louis, Mo.

40 U. S. and Canadian Stock Points and more than 75 Outside Thereof

Century MOTORS

Contest Page

Rules for December Cover Title Contest

Only the farmers or members of the farm family, to whom this magazine was sent, are eligible.

Only one title may be submitted.

Use the form below or write your answers on a plain sheet of paper in similar form.

Be sure to answer question (a).

Write plainly and send your suggestion to the Title Editor, ELECTRICITY ON THE FARM, 225 West 34th St., New York, before January 1.

For the best title to this month's front cover picture a $25.00 cash prize will be awarded.

In addition we will pay $5 for each of five titles given honorable mention. In case of a tie, each winning contestant will receive the full cash prize to which he or she is entitled. The winners will be announced in the February issue.

Winning Letters October Contest

1st Prize—$25.00

Mrs. Fred Kohlhardt
R. R. 1, Box 97
Oakwood, Wis.

"No one fully appreciates anything until they are deprived of it. I have found this to be true in the case of a water system. There is nothing I missed more than running water. .Therefore, I now class it as my favorite electrical servant.

"The electric washing machine cannot wash without water; nor can the dishwasher. The electric percolator cannot make delicious coffee without water and even my electric stove cannot cook meals without water. The true joy of these appliances would not be realized if every drop of water had to be carried in. Thanks to the electric water system."

Additional Prizes of $2.50 each were awarded to the following farmers whose names and letters appear on the following pages.

My Title for December Front Cover picture is.....

.....

.....

.....

.....

.....

(a) What magazines besides Electricity on the Farm do you read regularly?

.....

.....

Name .....

Address .....

OTHER WINNERS

The Mechanical Milker First

The writer is inclined to regard the mechanical milker as his favorite electrical servant. Unlike many other machines that can be used only for a short time each year, the milker is used twice a day wherever there is milking to do and thereby saves time all the year. Its use enables one or two to do the milking where more would be needed without a machine.

It has become very hard to obtain help who will aid with the milking. Usually this work falls to the farmer and his family to do. The only solution for this task has been the milking machine. It does not take a layoff when least expected; always works at the same speed; does not become tired; eats only when working and, where properly cared for, produces cleaner milk than by hand milking.

The advantages that an electrical milker has over any other form of power milker is that much of the fire hazard is eliminated by this form of power as there is no liquid fuel used that might possibly ignite. Insurance companies object to the use of gas engines in barns for the above reason. The electric milker is easier to start, is more dependable than others, and there are no exhaust fumes to taint the milk.

Lewis C. Bjerke,
R. 2, Box 1, Weyerhauser, Wis.

• • •

Chore Motor Pays

We were quite heavily in debt when we installed electricity, and it was necessary to work out a scheme to make electricity pay its own way. The "chore boy," our 5 h.p. portable motor, was the answer.

On the silo filling and feed grinding jobs alone, it has saved us the entire annual cost of our current, about $130. So we feel it has made possible our other electric servants, automatic range, washing machine, flat iron, milking machine, incubator, brooder, car heater, and light. The pump motor also saves actual cash for us.

Mrs. E. Witter,
R. 1, Oconto Falls, Wis.

• • •

The Versatile Vacuum Cleaner

How shall I choose? Can a fond mother choose among her seven children, different, but equally dear? So, my electrical aids are all precious to me.

Stove, radio, washer, fan, lights, obliterate yourselves for the nonce, from my memory while I choose the vacuum cleaner!

Absolutely essential in the home, it is a versatile servant, coming into play outdoors, where it cleans the interior of automobile, removes accumulated seed or dirt from grain drill, cleans bins for small grain and blows dust from machinery.

Mrs. Willis E. Lamphere,
Kirkwood, Ill.

• • •

Sweeps Cheaper Than Maid

My favorite electrical servant is my Hamilton Beach sweeper because I can do my cleaning quicker and cheaper than with a maid. I sweep all rugs, carpets, waxed oilcloth. With the attachments I do all the dusting, clean above the doors and windows, walls, woodwork, curtains, mattresses, bedding, pillows, springs, upholstered furniture, inside of the piano, and also the outside, the stairs, under low furniture, pictures and frames. By removing the dust bag I dry my hair, get feathers from one pillow to another, and mothproof and deodorize my whole house and furniture. I can also spray the chicken houses with insect powder.

Mrs. J. P. Schwoyer,
R. D. 3, Kutztown, Pa.

• • •

The Kitchen Aid — A Maid

My favorite electrical servant is my Kitchen-Aid; a maid who is never late; never shirks and always produces the same quality of food. At a snap of a switch hundreds of the operations of food preparation are accomplished and completed more quickly; with a better product as the result. Best of all it is so simple that little daughter can share in its use without fear of failure. I do not believe any other electrical servant can help in so many ways to lighten the housewife's daily tasks.

Mrs. Ray C. Smith,
R. 3, Fort Plain, N. Y.

• • •

Lightens Household Cares

An integral part of the equipment of the modern home, which lightens household cares and contributes to the health and happiness of every member of the family, is the electrical refrigerator.

As labor saver it is invaluable. It offers convenient storage, saving innumerable steps. It saves hours of marketing since one can purchase in quantities. Several meals can be prepared at one operation and stored until ready for stove or table. Pastry and bread dough can be mixed

The PRATER MILL
(HAMMER TYPE)

5 H.P. $75

Save Money~ Grind Feed at Home!

Guaranteed
1. To be entirely satisfactory.
2. To use a minimum amount of current or power.
3. To give a high quality of grinding year after year.

PRATER FARM MILL, the most popular hired man on the farm today! Always in good health and eager for work. Grinding grains or cracking corn (automatic feed) are the Prater Farm Mill's specialty. And it grinds roughages as fast as you can feed it.

Prater Farm Mill is interested in grinding for progressive farmers who appreciate the value of quality. Clean, sweet grains raised right on your own farm and ground as fine or as coarse as you want them. For power, you can use your portable motor for belt drive, or Prater Farm Mill brings its own General Electric Motor along. Prices for Prater Mill (without motor):

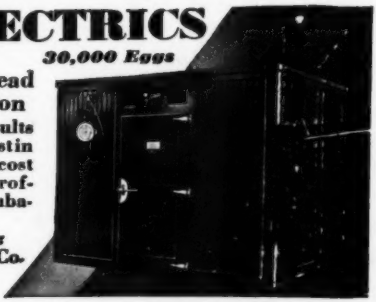
2 Horse Power size.....$48.75 3 Horse Power size.....$54.25
5 Horse Power size $75.00

Send for Prater Mill's new Book of Facts. Ask your power company or dealer for a demonstration.

PRATER PULVERIZER CO.
Dept. K-817 West Washington Boulevard, Chicago

SMITH ELECTRICS

52,000 Eggs *30,000 Eggs*



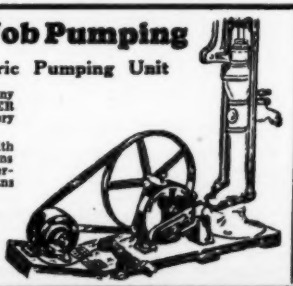
The Farthest Step Ahead in Electrical Incubation

FIRST in performance, results and quality chicks. Lowest in current consumption and cost of operation—highest in profits. The outstanding incubator of today.

Write for new Electric Catalog

The Smith Incubator Co.
3192 W. 121st St.
Cleveland, Ohio

Wanted—A Steady Job Pumping Water By a BEVAN Electric Pumping Unit



These Pumping Units will handle wells of any depth up to 500 feet. Built with ROLLER BEARINGS, they run quietly and are very economical on power.

The motion of the lift arms is vertical with no side thrust to wear out your pump. By means of our patented walking beam, a powerful leverage is obtained on the lifting stroke. This means a big saving in power.

Ask your dealer or write us for complete details and prices on Bevan Electric Pumping Units and Automatic Fresh Water Systems.

ACME MACHINE CO.
2901 Fremont Ave. So., Minneapolis, Minn.

in large quantities and used when needed. This saves time and fuel in meal preparation and the washing and putting away of utensils a second time.

Through the use of iceless refrigerator the family's health is safeguarded in all seasons without thought or attention from the housewife.

Mrs. Ruth Falls,
Cloverdale, Va.

* * *

It's My Refrigerator

It's my refrigerator! Since having this attractive ice box in our farm kitchen, thousands less steps to the basement are taken. Frozen desserts, ice-box cookies, rolls and fresh meats, in fact a supply for days, can be kept on hand ready for such times when extra men have to be fed or unexpected guests arrive. It's a pleasure to know that you are ready.

Now the farm lady "doesn't want to get away from it all," but has time for reading, music, and flowers, along with the regular farm work.

Mrs. D. D. Paine,
Route 3, Eagle Grove, Iowa.

* * *

The Washer Wins

Like a mother with her several children, I survey my electrical family and reluctantly pass my range, my iron, the vacuum cleaner and others, and name the washer my favorite.

Of all the hard, disagreeable, oft recurring and absolutely necessary tasks which are the lot of the farm mother, washing is the hardest. Fortunately into thousands of our homes has come the electric machine to do this work, thoroughly, quickly and cheaply with no Monday backaches.

The machine of today is a thing of beauty, safety and efficiency. The first cost is moderate and almost a life-time investment. The cost of operation adds only a few cents to the monthly bill but many happy hours to a woman's life.

Mrs. Nelle Ryan,
Sun Prairie, Wis.

* * *

The Silent Servant

When I read in your paper that you wanted to know "My Favorite Electrical Servant and Why," oh, boy! I though I had to tell every farm woman about the one I have because we farm women need it so much. It is a one horse power motor. The work it does for me is just wonderful. It runs a washer and wringer, butter churn, cream separator, an ice cream freezer, and also does many other things for my husband. Now, if that isn't some electrical servant I would like to know what is.

Mrs. Wayne Heberling,
R. F. D. 1, Tower City, Pa.

* * *

Cuts Churning Cost

My electric butter churn is my favorite electrical servant. Before the electric churn I had to pay a man $6.00 a week to turn the butter churn. Sometimes he was at it all day. Now I save that $6.00 and add $10.00 to it from the sale of my butter and buttermilk. My customers say it is the best buttermilk they ever tasted, and it is. The buttermilk will keep for days in the refrigerator. I could not do without my butter churn though I have been offered much better prices than I paid for it.

Belle A. Oliver Simmons,
Box No. 187, Suffolk, Va.

* * *

Eases the Hardest Task

My favorite electrical servant is my electric range. No line of work takes as much of a housewife's time as cooking and baking. With this servant to help I have no fires to build and replenish, no fuel to carry in, no ashes to carry out, and no danger of chimney fires when the wind is blowing hard. At any time of the day or any season of the year, it furnishes me with just the amount of fuel I need for cooking or for baking anything from a potato to an angel food cake.

Mrs. Will J. Reno,
Manchester, Mich.

Found

If happiness exists,
I've found it—
A half a mince pie
With a boy around it.
—Brooklyn Eagle.

Today

"Do your employees watch the clock?"
"No, only the stock ticker."—*Louisville Courier-Journal.*

Seven-year-old Sammy had so great a capacity for griddlecakes that he was a marvel to the family.

"Have you ever in your life had all you could eat?" asked his grandfather one day.

"Yes, sir," said Sammy; "lots of times."

"How do you know when that time comes?"

"Why, I eat and eat until I feel a pain, and then I eat more to make sure."

The LAUSON

Electric Pump Jack

will convert your ordinary pump into a water supply unit, controllable all weather by a button in the house, that will unfailingly deliver all the water you want —deep or shallow well, it works equally well.

Built Like a High Grade Auto Transmission

Machine cut hardened gears, fully enclosed, running in oil. Bronze bearings. No chains or sprockets. High grade motor. Compare with all others. Write for special literature and prices.

Also complete Water Systems

The John Lauson Mfg. Co.
700 Michigan St., New Holstein, Wis.

Clip Your Cows Electrically

The New **STEWART STOCKMAN**

is a powerful, smooth-running, quiet machine. Will give years of low cost service. Supplied for any specified current, from socket or lighting plant. Quickly pays for itself. Priced as low as $45.00.

Other Clipping machines as low as $14.00

More Profit From Your Cows

Clipped cows give more milk, richer in butter fat. Clipped cows are easiest to clean — their milk is cleaner and stays sweet longer. Tests show increased profit as high as $1.40 per month per cow.

Ask Your Dealer—Or Write
for FREE Catalog
Chicago Flexible Shaft Company
5524 Roosevelt Road, Chicago
40 Years Making World's Best Clipping and Shearing Machines

Valuable Information

All the manufacturers you will find represented on our advertising pages have interesting and valuable data about their equipment which is yours for the asking. When writing, be sure to mention ELECTRICITY ON THE FARM.

MAN POWER or HORSE POWER

NO farmer would hire help for twelve hours to do a two-hour job . . . . yet thousands of farmers are only utilizing electricity to the extent of 6% of its potential application. . . . *Why?*

Electricity can operate dairy machinery, mix feed, hoist hay, increase egg production, spray paint, thresh, heat, cook, ventilate, refrigerate, as well as furnish . . . . *Light.*

Industry progressed by leaps and bounds following electrification . . . . *so will farming.* Call in your local Contractor-Dealer. Let him estimate your wiring needs. For *Safety—Economy—Permanence,* specify

KNOB & TUBE WIRING — SAFE DEPENDABLE ECONOMICAL

Illinois Electrical Porcelain Company
Macomb, Ill.
Knox Porcelain Corporation
Knoxville, Tenn.
Porcelain Products, Inc.
Findlay, Ohio

Cheap Help

By A. W. ABBOTT

ONE of the most important time- and labor-savers on our Broadlawn Farm, near Downers Grove, is the quarter horsepower 110-volt motor. This little fellow, costing but a few dollars when purchased new two years ago, has already paid for itself several times over, and has been the cheapest "hand" we have ever had.

A. W. ABBOTT

In order to keep our Holsteins in presentable appearance and be able to produce the quality of milk the Pure Milk Association calls for, we clip the tails, flanks and udders of our milking herd of thirty head at least once a month during the part of the year that they are stabled, and the udders occasionally during the pasture season. This enables us to keep the hair free of dirt and manure with the minimum use of the brush and comb.

The improvement in the appearance of the herd by also clipping the long hair along the spine, neck and around the head is, to our notion, well worth the entire time spent on clipping. Buyers looking for young bulls are more readily satisfied if you can show the dam of the bull in an attractive condition. Clipping our herd of thirty head once a month would be a big job for two men if the clipping machine had to be turned by hand. We keep our quarter horsepower motor handy in the cow barn and whenever an opportune hour or so comes, one man goes ahead with the clipping without having to wait for help. We figure that the quarter horsepower motor costs us less than a cent and a half an hour to operate and wonder how we ever got along without it as long as we did.

Last spring we had 700 bushels of Velvet seed barley to sell and in order to get the top price we fanned practically all of it. The little motor turned the crank. Fanning 700 bushels of seed grain with our mill represents about 20 hours of work.

With the motor, however, one man can get along nicely alone as the machine is equipped with a bagger.

With only these three uses for the quarter horsepower motor on the Broadlawn Farm, it is so efficient we would not be without it at a cost of twice what we paid for it. We estimate the actual saving to be 35 cents for every hour we have used it. On farms where there is more steady employment for small motors, such as running a separator or churn, figuring time at only 30 cents an hour, the saving will run up to a lot of dollars in the course of a few months.

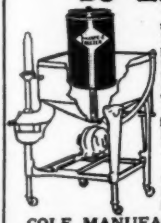
Where else can you hire help for a cent and a half an hour!

CLASSIFIED ADVERTISING

INVESTIGATE the proven records of economical operation and success of the LYON IMPROVED ELECTRIC BROODERS. Send for free authentic information and reports on electric brooding. Also ALARMS, Power-off, Temperature, Burglar, Heating & Thermostatic Supplies. Interesting circulars on modern poultry equipment upon request. Lyon Electric Co., Dept. FF, Box 1436, San Diego, Calif.

VACUUM CLEANER PARTS, attachments, armatures, bags, belts, brushes, bearings, wheels, assembly and motor parts and all else. Largest line. Highest quality. Lowest prices. REBUILT CLEANERS. All makes. Any quantity. All fully guaranteed for one year. Equal to new in action and appearance. Can also supply 32-volt and non-electric. Catalog free. UNITED ENTERPRISES, Inc., 1301 Athens Ave., Cleveland, Ohio.

So Easy



You simply clamp the DIXIE FREEZER to the dasher post of your Washing Machine—put in the ingredients and ice—and TURN ON THE POWER. In a short time your cream is frozen—delightfully smooth and velvety!

Write your dealer for full information, or, if he cannot supply you, write us:

COLE MANUFACTURING CO.
BIRMINGHAM, ALA.

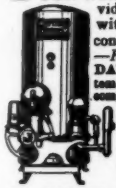
IMPROVE THE HEALTH OF YOUR LIVE STOCK

Use a GILLETTE Portable Electric Clipping and Grooming Machine. Operates on the light circuit furnished by any Electric Light & Power Co., or any make of Farm Lighting Plant.

Price List on Request

Gillette Clipping Machine Co., Inc.
129 West 31st Street, Dept. 11, New York City
40 Years Making Clipping and Grooming Machines Only

ELECTRICITY and a DAYTON Water System will provide your farm with the greatest convenience of all —*Running Water.*



DAYTON Water Systems are made in a complete range of capacities for deep and shallow wells. Write for details.

The Dayton Pump & Mfg. Company
Pioneer Makers of Private Water Systems

The DAYTON Unisystem made in four sizes. Dayton, Ohio, U.S.A.

Ask Your Power Co.

About the new famous Smith Brothers Electric Brooder, which can be ordered direct from this list:

18 in.	75 chick size,	$9.50
24 in	100 chick size,	10.75
32 in.	200 chick size,	16.00
42 in.	350 chick size,	20.00
56 in.	600 chick size,	24.00
72 in.	1000 chick size,	36.00

WELLINGTON J. SMITH CO.
936 Davis-Farley Bldg., Cleveland, Ohio

Sunlight the Greatest Remedy and Preventative of Disease!

Here is the sunlight machine you have been waiting for. Low in first cost and maintenance. Backed by expert research experiments and our unconditional guarantee. An ultra-violet lamp specially designed for many uses on the farm and in the home.

"Poultri-Lite"

stimulates laying—increases hatchability—doubles broiler weight—prevents and cures rickets, etc.

Safe and simple to operate. Prepare now to give your flocks the health and vitality this lamp produces through Vitamin "D."

Write for complete information and test reports on Dr. Chesney's Sunshine Carbons"—an exclusive feature of Poultrylite that assures positive results.

RUSSELL ELECTRIC COMPANY
340 West Huron St., Chicago, Ill.

SAFEGUARD

Electric Four Purpose Alarm

warns you in case of burglary, fire, failure of highline current or change in brooder temperature. Protects one or all buildings.

Cannot be beaten in any known way; simple to install and economical to operate. Sold under money back guarantee. If your dealer can't supply you, write

SAFEGUARD ALARM CO. Inc.
Council Bluffs, Iowa

Sharpen Axes Quicker

LUTHER Power Grinder

Axe grinding is easy with a Luther grinder. Will not burn or draw temper. No. 306 and No. 307 grinders with ¼-H.P. motor makes handy farm grinder for all work. Takes about nine minutes for sharpening dull, nicked axe and current cost 6/10 of a cent; motor does the work. Literature and prices at your dealer or from us.

LUTHER, INCORPORATED
209 South Water St. Milwaukee, Wis.

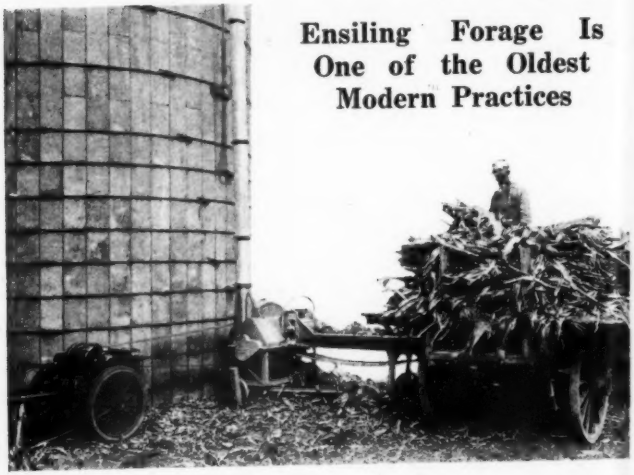
Send for FREE Book

The Surge Milker

Free Demonstration

Ask for free demonstration of this wonderful new milking machine. The Surge milks cows like no other machine ever milked cows before—milks them faster, cleaner and better! Has NO long Tubes—NO Claws. Overcomes bacteria troubles. Milk travels only 4 inches from teat to to pail. Write at once for free catalog and details of our Free Demonstration Offer, Easy Terms and rock bottom prices.

PINE TREE MILKING MACHINE CO.,
Dept. 55-19, 2843 W. 19th St., Chicago, Ill.



Ensiling Forage Is One of the Oldest Modern Practices

Electrical Silo Filling is the Modern Way

THE silo used on our American farms is often considered a relatively new invention. This is rather strange in view of the fact that the principle of ensiling green forage dates back to the days when the center of agricultural advancement lay in the Nile River valley of Egypt. The ancient Egyptians put their surplus green forage in a pit and kept it there as a safeguarding against famine.

Another interesting bit of silo history is that Caesar, upon invading Gaul, put green grasses in pits as a source of food for his cattle and horses. Perhaps his plan was that in case he should have to retreat over the lands which he had devastated, he would have periodical supplies of feed for his livestock.

Evidently the common use of the silo increased slowly, for not until 1860 do we find any books edited on the subject of silage. These were written in Europe.

It is not definitely known when the first silo was built in the United States, but most authorities agree that a square silo erected in Illinois in 1873, bears this distinction. It was filled with corn in that year and was used each year until 1919.

The Trench Silo

Trench silos are becoming more popular in many sections of the United States. The first silo of this type was dug and filled at Fort Atkinson, Wisconsin, in 1877.

At present there are approximately 550,000 silos in this country.

The small type silo, 8 to 12 feet in diameter, which is so well adapted to farms having only 10 or 15 dairy cows or a small herd of beef cattle, is practical because farmers can fill it themselves with a two or three man crew, and do it as a regular seasonal job. Experiments and actual practice have shown that tramping is unnecessary and a man is not needed at the feed table of the modern cutter. The elimination of these tasks and the use of an electric motor for power makes it possible for one man to feed and operate the cutter while another runs the binder.